CURRENT LITERATURE IN AGRICULTURAL ENGINEERING

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ENGINEERING

Vol. 6, No. 5. WASHINGTON, D. C. December, 1936.

Air Cleaners.

Effect of particle size of dusts in testing internal-combustion engine air cleaners. By F.A. Brooks. Agricultural Engineering. v. 17, no. 9. September, 1936. p. 379-382. Economic value of air cleaners for tractor engines can be estimated from saving in engine repair costs, which are so large under ordinary dust conditions that cleaner cost is unimportant. Selection of air cleaners then becomes a question of comparative performance and this in turn varies with nature of dust. Untilnow no investigation has been undertaken to measure effect of particle size. It seems desirable to continue this research on effect of particle size of dust and obtain more reliable data on engine retention, and large number of samples of dust actually drawn into cleaner.

Air Conditioning.

Air filters in air conditioning systems. By Frank B. Rowley. Refrigerating Engineering. v. 32, no. 5. November, 1936. p. 322-326, 350.

Humidity - and what it means. By F.C. Stewart. Southern Power Journal. v. 54, no. 11. November, 1936. p. 46-49. Humidity is becoming more and more the everyday problem of engineer. Article discusses fundamental factors and problems in humidity determinations, with the intention of making them clear and simple.

Independent dehumidification. By Leon Ourusoff. Refrigerating Engineering. v. 32, no. 5. November, 1936. p. 327-331. Design and performance of a silica unit.

Alcohol Fuel.

Alcohol in motor fuel proposed in Switzerland. Oil, Paint and Drug Reporter. v. 130, no. 2. July 13, 1936. p. 52. Question of government regulation making it compulsory to mix domestic alcohol with gasoline for motor fuel is being studied by two commissions in Switzerland, according to information received by Department of Commerce from viceconsul at Zurich. One commission is to examine purely technical side of question, other is to study distribution problem. It is contended that compulsory admixture of alcohol does not impair functioning of internal combustion engines in modern motor vehicles and that policy has been carried out successfully in certain European countries. It is estimated that through use of domestic alcohol imports of gasoline could be reduced appreciably, thus helping to correct nation's invariably adverse balance of trade.

Make waste into fuel. By O.A. Fitzgerald. Western Farm Life. v. 38, no.20. October 15, 1936. p. 8. Idaho experimenters compress cornstalks, straw, hulls and hay for fire and feed.

All-American Canal.

All-American canal gets allotment. Engineering News-Record. v. 117, no. 22. November 26, 1936. p. 765. P.W.A. allots three million for first power generating unit and distributing system for All-American Canal. Imporial Irrigation District has also secured from Rural Electrification Administration allotment of $700,000 for construction of distribution lines, but this money will not be available until project is approved by popular vote and certain legal difficulties are cleared up.

Associations.

Construction industry including a list of selected trade associations. By H.E. Bookholtz and C. Judkins. 1936. 123p. multigraphed. U.S. Bureau of Foreign and Domestic Commerce. Market Research Series no. 10.1.

Power Farming Conference. British Sugar Beet Review. v. 10, no. 3. November, 1936. p. 80. (Second conference to be held at Rhodes House, Oxford, from January 5th to January 8th next.) It will be held, as before, under joint auspices of School and Rural Economy, Agricultural Economics Research Institute, and Institute for Research in Agricultural Engineering, all of University of Oxford.

Barns.

Barns. By H.B. White, L.W. Neubauer and C.H. Christopherson, 1936. 16p. University of Minnesota. Agricultural Extension Division. Special Bulletin no. 98.

Dreams come true with modernized barns. Better Farm Equipment and Methods. v. 9, no. 3. November, 1936. p. 7-8.

Building Construction.

Glossary on door locks. By Don Graf. Pencil Points. v. 17, no. 1. January, 1936. p. 33-40.

Place of steel in farm building construction. By Earl D. Anderson. Farm Implement News. v. 57, no. 25. December 3, 1936. p. 30-31.

Solution of rigid frames of members of constant section by the theorem of joint translation. By Alfred Lawrence Miller. 1936. 40p. Washington. Engineering Experiment Station. Bulletin no. 89.

Tests and design of steel wind bents for tall buildings. By George E. Large and others, in cooperation with the American Institute of Steel Construction. 1936. 47p. Ohio Engineering Experiment Station Bulletin no. 93.

Variety of materials used for farm improvements. By Robert B. Smith. Lumber and Building Material Digest. v. 5, no. 4. April, 1936. p.10.

Cotton Machinery.

Better staple through better ginning. By D.T. Killough. Southern Agriculturist. v. 66, no. 9. September, 1936. p. 7. This involves use of mechanical and pneumatic devices for cleaning and extracting cotton; adjustment of automatic feeders; density of seed roll; condition and shape of saw teeth and ribs; speed at which saws are operated; and type of doffing equipment used in removing lint from saws. Investigations conducted by Texas Agricultural Experiment Station on use of air line cleaners show, in general, that grade of cotton and style of ginning was materially improved by their use in removal of dirt and trash from cotton. Types of cleaner did not appear to have any appreciable effect on length of lint or time required for ginning. Careful attention should be given to selection of equipment with sufficient capacity necessary for extracting and cleaning hand snapped and mechanically harvested cotton, so that efficient extracting and cleaning may be accomplished.

Calibration of cotton planting mechanisms. By H.P. Smith and M.H. Byrom. 1936. 32p. Texas. Agricultural Experiment Station. Bulletin no. 526.

Chemist mows cotton like hay and digests it in vats. Popular Mechanics. v. 66, no. 2. August, 1936. p. 238. Dr. Frank K. Cameron of University of North Carolina proposes growing cotton like hay, harvesting entire plant, grinding it to powder then treating it chemically. First oil would be extracted, then both cotton and stalks would be digested into alpha cellulose, base material for making rayon and other cellulose products.

Cotton picker - friend or foe? By E.C. Westbrook. Progressive Farmer. v. 51, no. 10. October, 1936. p. 12. What will be effect on South's agriculture? Just how practical the Rust cotton picker is cannot be determined until U.S. cotton ginning laboratories make ginning tests to determine how much of trash in cotton can be removed by cleaning machinery, thereby determining how much lower grade of machine-picked cotton will be than hand-picked cotton. Large particles of trash can be removed more effectively with cleaning machinery available than fine trash. If cleaning machinery available at gins leaves enough trash to lower grade considerably, loss from lower grade may tend to offset difference in cost of machine and hand-picked cotton. If it is a question of picking cotton before weather lowers grade in field, then lowering of grade in machine picking might be offset.

Cotton picker exhibit. Farm Implement News. v. 57, no. 25. December 3, 1936. p. 18. Arrangements have been completed for exhibition of cotton pickers at Museum of Science and Industry, Jackson Park, Chicago, beginning Dec. 8 and continuing until Feb. 28. Hours: 10 A.M. to 6 P.M. International Harvester and Meyercord pickers will be shown. Also mounted demonstrating spindle units from these and from Rust picker. There will be samples of cotton picked by hand and samples picked by IHC and Rust machines. In addition, exhibit will embrace following: Photostats of early pickers; photos of modern machines for

Cotton Machinery. (Cont'd)

planting, cultivating, picking and ginning; diagram of gin unit; operating Whitney gin and some other accessories. Samples of cotton will include short staple, long staple, brown lint, green lint and lintless.

Progress in ginning tests and gin testing instruments. International Cotton Bulletin. v. 14, no. 56. July, 1936. p. 461-462. Extracted from paper prepared by Charles A. Bennett, Senior Mechanical Engineer, United States Department of Agriculture, Bureau of Agricultural Engineering, and presented before 27th Annual Convention of the Texas Cotton Ginners' Association, Fort Worth, in April, 1936.

Culverts.

Experimental design of vertical drop culverts. By H.B. Roe. Agricultural Engineering. v. 17, no. 10. October, 1936. p. 426-432. Widespread interest of past few years in soil erosion problem has sharply stimulated research in soil erosion control measures. Among these elimination of gullies by use of soil-saving dams holds a prominent place. Essential feature of soil-saving dam is vertical drop culvert which lets water by while enabling retention, above the dam, of eroded material which finally fills gully. As there were not available definite data on which to base efficient and economical design of such culverts, means were sought early in 1931 for carrying out necessary research for supplying desired information. To this end a cooperative agreement was entered into between departments of hydraulics and of agricultural engineering of University of Minnesota. Studies presented were outcome of this cooperation. They were carried out at intervals during 1931, 1932 and 1933. Final analysis was completed in January, 1934.

Experimental design of vertical drop culverts. By H.B. Roe. Agricultural Engineering. v. 17, no. 11. November, 1936. p. 477-481. Summary and conclusions: 1. Experiments herein discussed indicate that open vortex occurrence can not be effectively controlled in practice by submerged or partially submerged baffles set vertically to intercept longitudinal or rototational flow of water; 2. Square, light, wooden float four diameters on side is effective in all cases tried in eliminating vortex occurrence, and except for relatively very low heads on lip of culvert does not increase loss of head; 3. Within physical limits of apparatus used in this study, and with particular reference to diameters of tube used, value of lost head for lengths of tube of apprximately five and a half diameters is expressed apparently within fair range of accuracy; 4. To assume that these formulas are applicable beyond sizes of tube and values of head on lip in diameters used in this study, to tubes of any diameter and for all values of head on lip, may not be fully warranted owing to limited extent of tests and to small diameters of tubes tested; 5. Therefore, more extended experimentation is desirable, ore fully to establish law applicable to all cases.

Dairy Farm Equipment.

Factors affecting the efficiency of steam sterilizers. Journal of the Ministry of Agriculture. v. 43, no. 6. September, 1936. p.553-560. Report on a series of tests carried out on various types of sterilizing outfits.

Dairy Farm Equipment. (Cont'd)

New steam sterilizer. By H.G. Linquist. New England Homestead. v. 109, no. 15. July 18, 1936. p. 7. Moderate in cost, inexpensive to operate, has practically no fire hazard, and sterilized efficiently. It consists essentially of a 1000-watt element which heats small amount of water to produce steam.

Production of clean milk. By S.V. Layson. Hoard's Dairyman. v. 81, no. 15. August 10, 1936. p. 394, 405.

Dams.

Dams: a bibliography of books, periodicals, and society publications appearing from January 1924 through March 1936. Compiled by Alvan W. Clark. Fort Belvoir, Virginia. The Engineer School. 1936. 256p.

Tests for hydraulic-fill dams: discussion. By D.P. Krynine and M.M. O'Shaughnessy. Proceedings of American Society of Civil Engineers. v. 59, no. 4, part 1. April, 1933. p. 617-620.

Turbulent flow from dam quelled by spillway jets. Popular Mechanics. v. 66, no. 2. August, 1936. p. 208. Quells turbulent flow by piping eight small jets of water through dam at bottom of spillway, just enough to maintain "hydraulic jump" - smooth flow of water away from dam. This method is being used on soil conservation dam near Phoenix, Arizona. Jets eight inches in diameter suffice to smooth out stream below 200-foot spillway.

Drainage.

Land drainage: the area of benefit. By B.A. Keen. Journal of the Ministry of Agriculture. v. 43, no. 6. September, 1936. p.521-526. Purpose of this article is to show that 8 ft. line is fair and reasonable limit to adopt for agricultural land. Argument must necessarily be couched in general terms; but it will show that, in average conditions, land up to 8 ft. contour benefits from adequate drainage. It is not to be expected that 8 ft. line is rigid one clearly marking upper limit of benefit; complexity of soil types and distribution, and variations in topography, are such, that, for practical purposes, average value must be assumed.

Removal of seepage waters by plant growth. By F.R. Arndt. Journal of the Department of Agriculture of South Australia. v. 39, no. 11. June, 1936. p. 1316. Shows how plant growth may in many ways be utilized to help to combat seepage menace.

Earth Pressure.

Arching in sands. By Karl Terzaghi. Engineering News-Record. v. 116, no. 20. May 14, 1936. p. 690-693. Pressure changes are caused by elastic movements within sand fill supported by timbering, and shearing stresses due to these movements relieve the pressure as the timbering deflects slightly.

Electric Service,Rural

Electricity supply and the farmer. By C.A. Cameron Brown. Oxford University, Institute for Research in Agricultural Engineering, 1936. 527-534p. Reprinted from the Journal of the Ministry of Agriculture, v. 43, no. 6.

Electric Wiring.

Materials to be used in farmstead wiring. By J. Romness. Wisconsin Agriculturist and Farmer. v. 63, no. 18. August 29, 1936. p. 16. In order to safeguard himself, the farmer who intends to install electric service should familiarize himself with approved materials and methods used to obtain adequate wiring job. Knob and tube wiring. Rigid metallic conduit. Flexible metallic conduit. Flexible non-metallic cable.

Wiring for the farm. Electric Light and Power. Chicago, Ill. 1936. 44p.

Electricity-Distribution

Columbus electrification project gets under way. Wisconsin Agriculturist and Farmer. v. 63, no. 21. October 10, 1936. p. 12. Wisconsin, next to Ohio, has shown greatest progress in country in development of R.E.A. program.

Cooperative societies under the Rural Electrification program. Monthly Labor Review. v. 43, no. 3. September 1936. p. 593-596.

Eleven states set up agencies to promote rural electrification. By Boyd Fisher. Rural Electrification. v. 2, no. 3. November 1936. p. 5-7. REA has consistently taken position that it will set up no State organization of its own. It desires to have direct contact with farmers and their organizations and will not delegate its functions to any State or regional agencies.

Progress in farm electrification. By J.C. Scott. Agricultural Engineering. v. 17, no. 11. November 1936. p. 473-475. Five major factors to be considered in problem of successful rural electrification: (1) line construction; (2) maintaining continuity of service which farm can depend upon; (3) helping farmer to use electricity to his economic advantage; (4) cost of electric service to farmers; and (5) financing farmstead wiring and purchase of equipment.

Electricity in the Home.

Electricity - a home and community builder. By J.E. Stanford. Southern Agriculturist. v. 66, no. 9. September, 1936. p. 6.

Electricity on the Farm.

Data on operation of farm machines by electricity. Farm Implement News. v. 57, no. 25. December 3, 1936. p. 26. Table shows motor horsepower used and approximate kilowatt consumption in various farm and house-

Electricity on the Farm. (Cont'd)

hold machines electrically-operated. It was prepared by B.P. Hoss of rural electrification department of Westinghouse Electric & Mfg. Co.

Electricity, the new farm hand. By John B. Gordon. Progressive Farmer. v. 51, no. 11. November, 1936. p. 9, 49. "Electrified farm and home" near national capital shows wonderful uses of electric power.

Electricity on farm shows profit, British expert finds in experiments. By R. Borlase Matthews. Rural Electrification. v. 2, no. 3. November 1936. p. 13-14.

Electricity supply and the farmer. B. C.A. Cameron Brown. Journal of the Ministry of Agriculture. v. 43, no. 6. September, 1936. p. 527-535.

Electrified farm travels in trailer. By R.K. Derry. Electrical World. v. 106, no. 43. October 24, 1936. p. 84-85.

"Farmer's new hired man" - electricity. By J.E. Stanford. Southern Agriculturist. v. 66, no. 7. July, 1936. p. 5.

Present status of electric fencing. By George W. Kable. Agricultural Engineering. v. 17, no. 11. November 1936. p. 471-472, 475. We, as engineers, now have reasonably definite data and factors upon which fence-controller design should be based: first is interest of farmers in reliable fencing unit as means of aiding farm management program, or perhaps in bringing about change in cropping or soil management which has been considered impractical in past. In turn we might then list (1) need of device which will limit maximum current on fence wire to safe value, possibly 10 milliamperes, voltage being relatively unimportant; (2) reliable controller which is fool proof, not likely to break down internally, and which will keep extraneous high currents off fence; (3) controller priced low enough to sidestep willingness of farmers to risk hazard of improvised system.

Engineering.

Engineer in Government service. By E.M. Markham. Civil Engineering. v. 6, no. 9. September, 1936. p. 568-571. Points out that a project which may not be justified from strictly engineering aspects may yet be of great value to nation as part of country-wide emergency construction program. In developing this topic, writer appeals for broader view of public works, and looks forward to increased influence for good government from engineers.

Engineering aspects of farm operating efficiency. By Geo. R. Boyd. Washington, U.S. Bureau of Agricultural Engineering, 1936. 5p. mimeographed. Presented before the North Atlantic Section, American Society of Agricultural Engineers, at Skytop, Pa., October 16, 1936.

Social responsibilities of the engineer. By J.K. Finch. Civil Engineering. v. 6, no. 12. December 1936. p. 815-816. Sound engineering principles versus wishful thinking in public works policies.

Erosion Control.

Beach erosion in Southern California. By the late C.M.Cram. Civil Engineering. v. 6, no. 12. December 1936. p. 808-809. Maintains that principal sources of sand along Southern California coast are rivers, that as result of construction of numerous irrigation and flood control works along these rivers, supply of beach sand is diminishing, and that erosion control works for beach protection are therefore in order.

Concrete silo staves used to pave Peoria streambed. By Jacob A. Harman. Engineering News-Record. v. 117, no. 14. October 1, 1936. p. 470. Articulated mat of concrete blocks strung on wire cables paves a streambed with hand labor and little excavation.

Conditions influencing erosion on the Boise River watershed. By F.G. Renner. 1936. U.S.Department of Agriculture. Technical Bulletin no.528.

Forest and agricultural influences in streamflow and erosion control: summary review of literature up to 1930. By W.C. Lowdermilk. Washington, D.C. Soil Conservation Service, 1936. 37, 4p. Mimeographed.

Groups of plants valuable for wildlife utilization and erosion control. By W.L. McAtee. 1936. 12p. U.S. Department of Agriculture. Circular no. 412.

Sheet erosion studies on Cecil clay. By Ellis G. Diseker and Robert E. Yoder. 1936. 52p. Alabama Agricultural Experiment Station. Bulletin no. 245.

Farm Buildings.

Better homes for pigs bring bigger profits. Wisconsin Agriculturist and Farmer. v. 63, no. 18. August 29, 1936.

Farm Income.

Farm and labor income in better balance. By Louis H. Bean. Bakers Technical Digest. v. 11, no. 3/4 October-November, 1936. p.89-90.

Farm income by states. Farm Implement News. v. 57, no. 25. December 3, 1936. p. 19. January-September receipts this year and last. During first nine months of 1936 farmers' cash income from sales of principal products and from government payments amounted to $5,220,549,000, compared with $4,624,941,000 in same period of 1935.

Farm Machinery and Equipment.

Communism, the new mother of invention. By John E. Pickett. Pacific Rural Press. v. 132, no. 15. October 10, 1936. p. 387. Machine, tried in California this year, successfully digs and tops sugar beets. Straddle row, lift beets, ingeniously carry them along endless belt arrangement, cut off tops, and deliver beets more or less in piles where they can be readily picked up.

Farm Machinery and Equipment. (Cont'd)

Cooperative use of machinery makes German farm experiment a success. Rural Electrification. v. 2, no. 3. November 1936. p.12. Unusual feature about German experiment is large part played by electricity and electrical appliances.

Dehorning, castrating, branding, and marking beef cattle. By W.H. Black and V.V. Parr. Revised. 1936. 13p. U.S. Department of Agriculture. Farmers' Bulletin no. 1600.

Harvester attacks the drouth problem. Farm Implement News. v. 57, no. 23. November 5, 1936. p. 38, 40.

Hays and haying methods for the upper peninsula. By B.R. Churchill. Michigan Agricultural Experiment Station Quarterly Bulletin. v. 18, no. 4. May, 1936. p. 211-217.

Home grinding limestone. By O.T. Coleman. 1936. 4p. Missouri. Agricultural Extension Service. Circular no. 352.

Housing farm machinery. By S.A. Witzel and F.W. Duffee. 1936. 24p. University of Wisconsin. Extension Service of the College of Agriculture. Circular no. 283.

Little comment on lines, specialties and new ideas. Farm Implement News. v. 57, no. 23. November 5, 1936. p. 33-34, 36.

Method of harvesting grapefruit to retard stem-end rot. By J.R. Winston. 1936. 8p. U.S. Department of Agriculture. Circular no. 396.

New developments in sugar beet machinery. By E.M. Mervine and S.W. McBirney. Agricultural Engineering. v. 17, no. 11. November 1936. p. 467-470.

Potato washing investigations. By C.L. Vincent and H.L. Garver. 1936. 24p. Washington. Agricultural Experiment Station Bulletin no. 332.

Specifications of Farm Hammer Mills. Farm Implement News. v. 57, no. 23. November 5, 1936. p. 40.

Farm Mechanics.

Determining the tonnage of hay in long stacks and round stacks. By F. B. Headley. 1936. 14p. Nevada. Agricultural Experiment Station. Bulletin no. 143.

Feed Grinders and Grinding.

More use for grinder. Wisconsin Agriculturist and Farmer. v. 63, no.20. September 26, 1936. p. 3. They are all-round machines, used as combines or grain separators, as well as grinders. As roughage grinders and choppers, such machines make it possible to utilize leafy fodder

Feed Grinders and Grinding. (Cont'd)

that might be partially wasted if not so chopped or ground for the live stock. Economy of feeds is one feature gained by use of modern mill. Often grain and roughage are ground and chopped together in palatable feed ration. Much dusty powder is prevented with use of modern grinders. Horses are grateful. Wet fodder should not be ground in this way. It cannot be kept from spoiling long if it contains too much moisture.

Fertilizer Placement.

New developments in fertilizer placement research. By G.A. Cumings. Agricultural Engineering. v. 17, no. 11. November 1936. p.461-464.

Fires.

Stop cotton gin fires. By Henry G. Knight. Southern Agriculturist. v. 66, no. 9. September 1936. p. 11, 19.

Floods and Flood Control.

Better flood forecasting and flood warning needed. By Robert E. Turner. Engineering News-Record. v. 117, no. 22. November 26, 1936. p.751-752. Federal government should strengthen flood-forecasting facilities of U.S. Weather Bureau. A qualified hydrologist in each district office should be charged with responsibility for issuing advance warnings of floods.

Came the floods. By Harold W. Richardson. Colorado Engineer. v. 33, no. 1. November, 1936. p. 3-5, 14.

Conservation farming practices and flood control. By H.H. Bennett. 1936. 16p. U.S. Department of Agriculture. Miscellaneous Publication no. 253.

Forests in flood control: supplemental report to the Committee on flood control, House of Representatives, 74th Congress, 2d session on H.R. 12517, to provide for a permanent system of flood control and for other purposes. Compiled by E.N. Munns and Ivan H. Sims. Washington, D.C. 1936. 70p.

High water data: flood of March 1936 in Massachusetts. Prepared by Massachusetts Geodetic Survey. Boston, Mass. 1936. 210p. Multigraphed.

Structural alloys and river control discussed at Pittsburgh - I. Engineering News-Record. v. 117, no. 17. October 22, 1936. p. 584-588. Fall meeting of American Society of Civil Engineers occupied mainly with symposiums on modern structural metals, floods and correction of stream pollution. Power, highway traffic and state control networks also represented.

Structural alloys and river control discussed at Pittsburgh. II. Engineering News-Record. v. 117, no. 18. October 29, 1936. p. 610-613.

Floods and Flood Control. (Cont'd)

Forage Drying.

Dehydration of farm products. By F.E. Price. Agricultural Engineering. v. 17, no. 10. October, 1936. p. 435-437.

Grass drying. Rural Electrification and Electro-Farming. v. 12, no.137. October, 1936. p. 92-94. Description of the process utilized in the I.C.I. Billingham drier, together with details of costs involved, showing its economic value to the farmer.

Natural drying of forage crops. By T.N. Jones and L.O. Palmer. Agricultural Engineering. v. 17, no. 10. October, 1936. p. 433-434, 437.

Nutritive value of artificially dried grass, and its effect on quality of milk produced by cows of main dairy breeds. By S.J. Watson and W.S. Ferguson. Journal of Agricultural Science. v. 27, no. 12. December, 1935. p. 189-209.

Fuels.

Petroleum shortage and its alleviation. By L.C. Snider and B.T. Brooks. New York. The Chemical Foundation, Inc., 1935. 38p. The deserted village no. 6.

Hay Drying.

Moisture content at which alfalfa leaves shatter. By Frank J. Zink. Agricultural Engineering. v. 17, no. 8. August, 1936. p. 329-330. In conclusion, author considers that under conditions of this test, shattering occurs, or hay is in condition for shattering, even before it is sufficiently dry for storage. Data indicates possibility of night, including evening or morning operations, as means of securing improved quality of hay. This procedure is supported in practice especially in Arizona where night working in hay fields is in vogue. As further conclusion, it appears possible, where hay is dried artificially, to permit hay to remain in field without loss of dry matter until average moisture of around 40 percent was reached, thereby effecting considerable fuel economy.

Heat Transmission.

Sun effect and heat flow through brick walls as studied with the hydrocal. By J.F. Lamb. Heating and Ventilating. v. 33, no.8. August, 1936. p. 32-35. Device is designed for solution of heat flow problems. Since flow of heat is analogous to flow of water, each of many glass tubes can represent different points through a wall, with height of water column in each tube representing temperature or heat stored at given point at given time. Resistances to flow of heat for given problem are set up by varying hydraulic resistances between corresponding tubes.

Houses.

Built-in bedroom closets for the farm home. By Fra Clark. 1936. 7p. Missouri. Agricultural Extension Service. Circular no. 350.

Complete cottage kitchen folds into cabinet. Popular Mechanics. v. 66, no. 2. August, 1936. p. 263-265.

Cooperative and joint-ownership housing in the United States and abroad. By Benjamin M. Gruzen and Rebecca Breskin. Washington, D.C., Central Housing Committee, Sub-committee on Research and Statistics, 1936. 7p. multigraphed. Selected References on Housing no. 2.

Urban housing: the story of the P.W.A. housing division. 1933-1936. Washington, D.C., 1936. 105p. Housing Division, P.W.A. Bulletin no. 2.

Hydraulic Rams.

Hydraulic ram. By W.H. Sheldon. 1936. 9p. Michigan State College. Extension Division. Extension Bulletin no. 171

Hydraulic Research.

University of Minnesota constructs hydraulic laboratory at St. Anthony Falls. By Lorenz G. Straub. Civil Engineering. v. 6, no. 12. December 1936. p. 845.

Hydroelectric Power.

Are St. Lawrence power estimates too high? By Theron M. Ripley. Civil Engineering. v. 6, no. 12. December 1936. p. 805-807. While ratification of St. Lawrence power development treaty is pending, water levels of Lake Ontario and of St. Lawrence River at Montreal continue slowly to fall. Question of sufficiency of stream flow to justify project as now contemplated is thus brought up anew, and course of reasoning followed by Mr. Ripley would seem to give grounds for challenging accuracy of existing official estimates of power available. His study leads him to believe that if project constructed on basis which now appears contemplated, useful life of 50 years would be most that could reasonably be expected.

Hydroelectric power in Washington; Part IV: Regional electric-power transmission. The grid system. By Carl Edward Magnusson. 1936. 51p. Washington. Engineering Experiment Station. Bulletin no. 90.

Insulation.

Heat transfer insulation. Bakers Technical Digest. v. 11, no. 3/4. October-November, 1936. p. 86. Description of two series of tests carried out in thermo-technical room of Royal High Institute of Engineering, Turin, and relating to heat transfer through various building materials and insulants.

Irrigation.

Essentials of irrigation and cultivation of orchards. By F.J. Veihmeyer and A.H. Hendrickson. Revised September 1936. 24p. California Agricultural Extension Service. Circular no. 50.

Model law for motion of salt water through fresh: discussion. By Herbert D. Vogel and C.E. Grunsky. Proceedings of American Society of Civil Engineers. v. 59, no. 4, part 1. April, 1933. p. 688-691.

Most water in history. Western Farm Life. v. 38, no. 20. October 15, 1936. p.12. Half million acres of irrigated land in Southern Idaho yielding bumper crops. Irrigation was finished middle of September on all farm projects adjoining Snake river system through southern Idaho. Big Wood project of about 70,000 acres in Blaine, Lincoln and Gooding counties had new high record of 115 per cent water delivery part of season. Twin Falls project, 202,000 acres, North side project, 70,000; Minnidoka, 71,000; Burley, 49,000, and Murtaugh, 8,100 acres, also had full supplies to produce bumper crops in all lines. Salmon tract, 30,000 acres, was better watered than in 1935. Only major product which suffered damage to any extent was wheat. Intermittent showers during much of summer, and sudden hot spells, caused rust which reduced general wheat yield from about 10 to 20 per-cent on different parts of irrigation area.

Use of water by Washington navel oranges and marsh grapefruit trees in Salt River Valley, Arizona. By Earl Harris, A.F. Kinnison, and D.W. Albert. 1936. 441-496p. Arizona. Agricultural Experiment Station. Bulletin no. 153.

Land.

Peat land in the pacific Coast states in relation to land and water resources. By A.P. Dachnowski-Stokes. 1936. 68p. U.S. Department of Agriculture. Miscellaneous Publication no. 248.

Land Utilization.

Federal seed-loan financing and its relation to agricultural rehabilitation and land use. By Norman J. Wall. 1936. 60p. U.S. Department of Agriculture. Technical Bulletin no. 539.

Laying out fields for tractor plowing. By C.D. Kinsman and L.A. Reynoldson. Revised. 1936. 18p. U.S. Department of Agriculture. Farmers' bulletin no. 1045.

Utilization of aerial photographs in mapping and studying land features. By T.P. Ahrens. Washington, D.C., 1936. 27p. multigraphed. U.S. Resettlement Administration. Land-Use Planning Publication no. 6.

Landslides.

Analysis and control of landslides. By Robert Graham Hennes. 1936. 57p. Washington. Engineering Experiment Station. Bulletin no. 91.

Lubrication.

Tractor engine lubrication under low temperature conditions. By E.A. Hardy. Agricultural Engineering. v. 17, no. 11. November 1936. p. 465-466, 470. Tractor engine must be given special consideration when operated in western Canada if adequate lubrication is to be had. Engine must be warmed up quickly and maintained at reasonably high operating temperature. Oil must be clean and of grade which will flow freely in forming mist to lubricate working parts of engine. Use of top lubrication or oil in gasoline to protect piston rings and cylinders during warming-up period is imperative. Finally, engine must be in good mechanical condition and protected from extreme cold when operated in zero or subzero weather.

Meters.

Improved type of flow meter for hydraulic turbines. By Ireal A. Winter. Proceedings of American Society of Civil Engineers. v. 59, no. 4. part 1. April, 1933. p. 565-584. Writer describes fundamentals of new method of determining turbine discharge, and discusses at some length, results obtained on models tested in laboratory and actual plant installations.

Miscellaneous.

Change rules the rails. By Dr. C.M.A. Stine. New York. The Chemical foundation, inc., 1936. 44p. The deserted village no. 8.

Crazy weather. By F.L. Teuton. Southern Agriculturist. v. 66, no.7. July, 1936. p. 7, 20.

Excluding birds from reservoirs and fishponds. By W.L. McAtee and S.E. Piper. Washington, D.C. 1936. 6p. U.S. Department of Agriculture. Leaflet no. 120.

Farm real estate situation, 1935-1936. By B.R. Stauber. Washington, D.C. 1936. 40p. U.S. Department of Agriculture. Circular no. 417.

Forty-eighth annual report, 1935. Texas Agricultural Experiment Station. 1936. 294p. Agricultural material, p. 132-136.

Forty-ninth annual report of the Colorado Agricultural Experiment Station. July 1, 1935-June 30, 1936. Fort Collins, Colorado, 1936. 44p.

Game management on the farm. By J.N. Darling, H.P. Sheldon and Ira N. Gabrielsen. 1936. 22p. U.S. Department of Agriculture. Farmers' Bulletin no. 1759.

Geodetic operations in the United States, January 1, 1933, to December 31, 1935. By William Bowie. Washington, D.C., 1936. 25p. U.S. Coast and Geodetic Survey. Special Publication no. 207.

Italian synthetic fibre "Lanital." International Cotton Bulletin. v. 14, no. 56. July, 1936. p. 468, 471. Dr. Josef Plail describes number of tests which he carried out on Italian synthetic fibre "Lanital," which is made from casein.

Miscellaneous. (Cont'd)

Measuring hay stacks. Hoard's Dairyman. v. 81, no. 15. August 10, 1936. p. 396. New rules for measuring stacked hay, more accurate than those used in the past, have recently been worked out by Experiment Stations in Minnesota and other States, cooperating with U.S. Department of Agriculture.

Report of the Great Plains Drought Area Committee, August, 1936. By Hugh H. Bennett and others. Washington, D.C., 1936. 17p. multigraphed.

System for filing technical literature. By E.W. Lane. Civil Engineering. v. 6, no. 12. December 1936. p. 818-820.

Mississippi River.

Stages of the Mississippi River and of its principal tributaries for 1934. Compiled at the Office of the President, Mississippi River Commission, Vicksburg, Miss. 1936. 107p. War Department. Corps of Engineers, U.S. Army.

Motors.

Speed changer for motor drive. By H.J. Gallagher. Electricity on the Farm. v. 9, no. 9. September, 1936. p. 18, 20.

Orchard Heaters.

Automatic regulator for orchard heater devised. California Citrograph. v. 21, no. 8. June, 1936. p. 301. Device operates on thermostatic principle, blade of thermo-metal expanding from heat of burning oil permitting regulating plate to drop down and narrow draft opening, thus controlling volume of air, and thereby burning rate of heater.

Plows and Plowing.

Hydro demonstration at Provincial plowing match at Cornwall. Bulletin of the Hydro-Electric Power Commission of Ontario. v. 23, no. 10. October, 1936. p. 348-350.

Poultry House and Equipment.

Novel brooder house. Pacific Rural Press. v. 132, no. 10. September 5, 1936. p. 253. New 24 by 120 foot brooder house consists of 80 brooder units for 100 chicks each. Even span, galvanized iron roofed building has concrete floor, and center aisle about 2½ feet wide, with 40 3 by 10 screen partitioned rooms on either side. Building runs north and south, has no walls on east or west side, merely chicken netting. Heat for baby chicks is supplied in small cabinets which rest upon floor. Three-foot compartment is heated by two hot-water pipes which pass through entire length of house. Heat is furnished by two ordinary kitchen-type hot-water heaters in concreted pit at end of house. Gas fuel is controlled by thermostat located in

Poultry House and Equipment. (Cont'd)

first pen on either side of building. Baby chicks roost upon hardware cloth floor, with pit 6 inches deep underneath. Roosting boxes are made with glassed-in top window, through which it is possible to observe chicks. Slide gate separates brooder box from run, which is about ten feet long.

Poultry housing. By Cora Cooke. 1936. 15p. University of Minnesota. Agricultural Extension Division. Special Bulletin no. 121.

Wisconsin straw loft poultry house. By J.B. Hayes and S.A. Witzel, 1936. 24p. University of Wisconsin. Extension Service of the College of Agriculture. Circular no. 284.

Power.

Growth and development, with special reference to domestic animals: XL. Comparison between efficiency of horse, man, and motor, with special reference to size and monetary economy. By Samuel Brody and Richard Cunningham. 1936. 56p. Missouri. Agricultural Experiment Station. Research Bulletin no. 244.

Pumps and Pumping.

Equipping a small irrigation pumping plant. By W.E. Code. 1936. 55p. Colorado. Agricultural Experiment Station. Bulletin no. 433.

Rainfall and Runoff.

Forests and stream flow; discussion. By Herman Stabler and H.S. Gilman. Proceedings of American Society of Civil Engineers. v. 59, no. 4, part 1. April, 1933. p. 607-616.

On the relation between rainfall and stream flow. By Richmond T. Zoch. Washington, D.C., U.S. Weather Bureau. 1935-36. Part I. Reprinted from Monthly Weather Review, v. 62, September 1934. 315-322p. Part II. Reprinted from Monthly Weather Review, v. 64, April 1936. 105-121p.

Rammed Earth.

Specifications for rammed-earth construction. By R.L. Patty. Agricultural Engineering. v. 17, no. 11. November 1936. p. 476.

Reclamation.

Reclamation of white-alkali soils in the Imperial Valley. By Edward E. Thomas. 1936. 15p. California. Agricultural Experiment Station. Bulletin no. 601

Refrigeration.

Handling, precooling, and transportation of Florida strawberries. By Dean H. Rose and E.A. Gorman, Jr. 1936. 58p. U.S. Department of Agriculture. Technical Bulletin no. 525.

Refrigeration.

Refrigeration in public health. By Samuel C. Prescott and Bernard E. Proctor. Refrigerating Engineering. v. 32, no. 5. November 1936. p. 315-316. Report of progress in its application.

Refrigeration on the farm. By L.J. Smith. Idaho Farmer. v. 54, no. 15. July 23, 1936. p. 6. Gives detailed cost of little refrigeration building, which was built entirely by outside labor in spring of 1933.

Refrigerator Lockers.

Cold storage locker business. By Ward E. Guest. Ice and Refrigeration. v. 91, no. 4. October, 1936. p. 280-281. Experience has developed basic principles of operation essential to profitable operation. Multiplicity of services now demanded by patrons.

Refrigerators.

Morse traces development of refrigerating machinery using Freon-12. By L.S. Morse. Electric Refrigeration News. v. 19, no. 2. September 9, 1936. p. 35-37.

Reservoirs.

Freeboard for water-impounding structures. By Fred H. Wolf. Civil Engineering. v. 6, no. 12. December 1936. p. 817-818. Logical method of determining freeboard for reservoirs, which takes into account both fetch and maximum wind velocity, is presented.

Sealing reservoir lakes with clay grouting. By E.S. Randolph. Military Engineer. v. 28, no. 159. May-June, 1936. p. 208-214.

Resources.

Permanent Board for resources study. Engineering News-Record. v. 117, no. 3. July 16, 1936. p. 98. Progress report made to President Roosevelt by National Resources Committee again recommends that committee be set up by law as permanent board. Report recommends that board should not be placed in any of regular departments of the government, but be directly attached to President's executive staff. Committee recommends that National Development Administration be established to negotiate agreements between federal departments and local governments for performance of public works and to allocate costs in accordance with policies prescribed by Congress. Creation of a permanent land section under National Resources Committee, made up of representatives of various agencies concerned, to coordinate government policies with respect to land use is also urged.

Sanitation.

Constructing village water works and sewers. By E.A. Lawrence. Civil Engineering. v. 6, no. 8. August, 1936. p. 506-510. Consulting engineer meets a variety of diversified problems in village practice.

Sanitation. (Cont'd)

Progress in sanitation. By Edward Bartow. Science. v. 84, no.2180. October 9, 1936. p. 317-322.

Silos.

Silage production. By E.S. Hopkins and P.O. Ripley. 1936. 79p. Canada. Department of Agriculture. Publication no. 525. Farmers' Bulletin no. 13.

Silos and silage. Hoard's Dairyman. v. 81, no. 17. September 10, 1936. p. 454.

Temporary silos for drought-stunted corn. Hoard's Dairyman. v. 81, no. 16. August 25, 1936. p. 418. Table gives capacity of trench silo in cubic feet, pounds per foot of length and minimum hord for each foot in length.

Trench silo stores feed well. Idaho Farmer. v. 54, no. 18. September 3, 1936. p. 6. Trench silos are usually constructed in fairly heavy soils, where there is good drainage and where winter months are sufficiently cool to retard formation of molds. Size should be regulated by number of animals fed. At least three inches should be removed per day. Silage should be well packed by driving horses or small tractor over silage while filling. If the corn or other material is dry, use plenty of water. Cover top with six inches of wet straw or hay, then with three or four inches of dirt, giving top a good slope to assist in shedding of rain.

Silt.

Problem of soil in transportation in Colorado River: discussion. By C.E. Grunsky, Ivan E. Houk and H.M. Rouse. Proceedings of American Society of Civil Engineers. v. 59, no. 4, part 1. April, 1933. p. 682-687.

Snow Surveys.

Snow surveys predict runoff. By G. A. Hathaway. Engineering News-Record. v. 116, no. 21. May 21, 1936. p. 728-730. Stream discharges studies of condition of snowfields, which will be continued as guide to future operation of Fort Peck reservoir.

Soil Conservation.

Drought area committee report urges water and soil conservation. Engineering News-Record. v. 117, no. 10. September 3, 1936. p. 349-350. Great Plains problem found to require farming changes, dams, wells and irrigation systems.

Is soil conservation the answer to the farm problem? Northwest Farmer. v. 5, no. 6. October, 1936. p. 3, 11.

Soil Conservation. (Cont'd)

Nevada soil conservation program. By Frederick W. Wilson. Pacific Rural Press. v. 132, no. 9. August 29, 1936. p. 198. Suggestions put forward were as follows:- 1. Fencing. This is to protect special grazing areas and thereby conserve feed, aid reseeding, and protect against water erosion. 2. Corrals and feed lots. Erection of corrals and feed lots, and repairing those now in existence to avoid long drives in handling livestock; also for use of saddle horses. 3. Water spreading. Construction and repair of ditches in order to improve flood method of applying irrigating water. 4. Water development. (a) Springs, (b) reservoirs, and (c) wells. This problem is one of greatest because most of private land holdings are for control of open range. Development of more water promotes wider grazing of areas, and thereby minimizes over-grazing near stock-watering spots. More development also will minimize range forage depletion because livestock will not be compelled to travel long distances, which causes loss of flesh. 5. Fire lines. Many stockmen provide areas for grazing mature forage. Fire guards protect these areas. 6. Control water utilization. This would include drainage, repair of irrigation ditches, etc. 7. Rodent control. 8. Sagebrush railing to promote other forage growth that might be more desirable in certain range areas.

Soil Moisture.

Comparative moisture-absorbing and moisture-retaining capacities of peat and soil mixtures. By I.C. Feustel and H.G. Byers. 1936. 26p. U.S. Department of Agriculture. Technical Bulletin no. 532.

Hydrologic interrelations of water and soils. By Robert E. Horton. Washington, D.C., 1936. 60p. mimeographed.

Is the West drying up? By Joseph L. Dailey. Nation's Agriculture. v. 11, no. 11. September, 1936. p. 2-3, 10. Series of droughts are bound to occur in the West. They are not caused by cultivation of Plains and cannot be prevented by building ponds and lakes.

More on the subject of stored soil moisture. Dakota Farmer. v. 56, no. 19. September, 1936. p. 442.

Watch moisture prior to fall winds. By Harold E. Wahlberg. Pacific Rural Press. v. 132, no. 15. October 10, 1936. p. 392. Wind injury can be greatly reduced by proper management of irrigation practice throughout the year - conservative application in spring months to allow fluctuation of moisture content. Ample amount of moisture should be available during the fall months.

Soil Pressure.

Distribution of stresses under a foundation: Discussion. By A.A. Eremin, A. Casagrande and A.E. Cummings. Proceedings of American Society of Civil Engineers. v. 62, no. 5. May, 1936. p. 709-727.

Soil Pressure. (Cont'd)

Lateral pressures of cohesionless soils in retaining wall designs. By Donald W. Taylor. Engineering News-Record. v. 117, no. 3. July 16, 1936. p. 76.

Simple tests determine hydrostatic uplift. By Earl Terzaghi. Engineering News-Record. v. 116, no. 25. June 18, 1936. p. 872-875. Study of hydrostatic uplift in clay and concrete with an analysis of simple tests for determining values. Description of three independent methods for determining value of reduction factor x employed in calculations of hydrostatic uplift. Each method is simple enough to be used on any materials or soil testing laboratory. In discussion uniform notation given in accompanying panel is used throughout. Meaning of other symbols is explained in text as discussion proceeds

Soil Surveys.

Importance of soil surveys in the Philippines. By Marcos M. Alicante. Sugar News. v. 17, no. 8. August, 1936. p. 323-324. Some of most important considerations regarding value of soil surveys, under Philippine condition, are briefly discussed as follows: 1. Information obtained from soil surveys enable us to adjust fertility of soil in order to increase yield and reduce cost of crop production per unit area. 2. Our population is increasing very rapidly, and natural tendency is to migrate to non or thinly populated districts. 3. At present whole world is faced with an over production of sugar. 4. Forest products will probably always be considerable source of income for Philippine Government. 5. Soil erosion has always been a serious problem all over world. 6. In construction of roads, bridges and same, it is important that physical properties of soil as well as nature of profile stratification be taken into consideration. 7. Irrigation and drainage are important factors in crop production. 8. In land transactions buyer will have better guide if land in which he is interested has been soil surveyed.

Soil Temperature.

Control of high soil temperature. By G.E.P. Smith. Agricultural Engineering. v. 17, no. 9. September, 1936. p. 383-385.

Standardization.

New Federal dockage tester. National Grain Journal. v. 20, no. 7. June, 1936. p. 44, 46. Bureau of Agricultural Economics, United States Department of Agriculture, announced completion of mechanical device for use in applying those grade specifications of the United States grain standards which require sieving.

Storage.

Common storage: its construction and management. By Donald Comin. 1936. 49p. Ohio. Agricultural Experiment Station. Bulletin no. 573.

Storage. (Cont'd)

Effects of shortage of farm storage space and inability to get local bank credit on the movement of Kansas wheat to market. By R.M. Green. 1927. 28p. Kansas. Agricultural Experiment Station. Bulletin no.244.

Farmer-owned apple storages. By P.L. Sackett. Refrigerating Engineering. v. 32, no. 2. August, 1936. p. 78-80. Description of two New England plants. Discussion of economics, types of cooling units, costs, and other aspects of the problem.

Full bins mean money. By R.M. Loper. Nebraska Farmer. v. 78, no. 13. June 20, 1936. p. 3, 21. Cribs made to fit the farm provide efficient storage for surplus crops.

Grass farming success depends on processing and storage. By E.T. Leavitt. Implement & Tractor. v. 51, no. 11. May 20, 1936. p. 9, 28.

Refrigerated stores. By Frank H. Slade. Rural Electrification and Electro-Farming. v. 12, no. 136. September, 1936. p. 59-62. "Gas" storage of apples, and all-the-year storage of farm products.

Storage of corn fodder or stover. B. E.A. Silver. Agricultural Engineering. v. 17, no. 9. September, 1936. p. 392, 394.

Surveying.

First and second order triangulation and traverse in Minnesota (1927 datum) By Walter F. Reynolds. Washington, D.C., 1936. 411p. U.S. Coast and Geodetic Survey. Special Publication no. 203.

Land surveying and surveying equipment. By Aldert Molenaar. 1936. 19p. mimeographed. Nebraska Cooperative Extension Work in Agriculture and Home Economics. Extension Circular no. 751.

Tennessee Valley Authority.

Development of the Tennessee Valley. Tennessee Valley Authority. Washington, D.C., 1936. 15p.

Is TVA really hurting private utilities? By David E. Lilienthal. Washington, D.C., 1936. 12p. Reprinted from the June 4th issue of Public Utilities Fortnightly

Report to the Congress on the unified development of the Tennessee River system. Tennessee Valley Authority. Knoxville, Tenn., 1936. 105p.

R.V.A. harnesses the Tennessee River. Power. v. 80, no. 7. July, 1936. p. 354-357.

Teaching grandmother how to spin. By William I. Nichols. New York, Harper & Brothers, 1936. 113-119p. Reprinted from Harpers Magazine, July, 1936.

Terracing.

How terracer is made and works. Missouri Ruralist. v. 77, no. 12. June 13, 1936. p. 17. A V-terracer developed at Oklahoma Experiment Station by W.H. McPheters, has proved satisfactory for use by farmers. Cost of building machine is $6 to $10. Framework of terracer is made of 2 by 12-inch planks and is heavily constructed and reinforced with "dimension" lumber. The forward point, rear end of landslide, and moldboard are covered with metal to prevent rapid wear. Old grader blade is bolted to face of moldboard to make it pick up and move earth, and to prevent wearing.

Method of measuring acres per mile of terrace and total acres benefited. By V.R. Hillman. Agricultural Engineering. v. 17, no. 9. September, 1936. p. 395, 408. Purpose of discussion is to suggest method of determining both acres per mile of terrace and actual area benefited by any number and length of terraces in a field or in a system of parallel terraces.

New development in terracing in the Southeast. By M.L. Nichols. Agricultural Engineering. v. 17, no. 9. September, 1936. p. 393-394. General trend of development of erosion control work in Southeast is toward coordinated program in which terracing is considered by all as an important part. Relationships of such structures as terraces, and of soil type, to general farm program and other factors, is receiving increased attention. In this paper observations of studies are presented to indicate trends in engineering practice and thought, rather than to give specific technical detail

Stone terraces of Kentucky defy erosion for century. By F.E. Charles. Soil Conservation. v. 2, no. 4. October, 1936. p. 64-65, 83.

Tires.

Calcium chloride anti-freeze solutions for water-weighted tires. Farm Implement News. v. 57, no. 25. December 3, 1936. p. 31. Table.

Cost less and wear longer. By P.W. Litchfield. Farm Machinery and Equipment. v. no. August 15, 1936. p. 9. Rubber tires now cost less than one-fourth of what they cost before the war, and last ten times as long.

Hare's feet for the tortoise. Better Farm Equipment and Methods. v. 9, no. 2. October, 1936. p. 5-6. They cushion tractor or vehicle from shocks - lengthen its life, lower depreciation, reduce repair costs. They cut fuel costs too - for these big smoothly rolling tires transmit fuel power to wheels with materially less lost motion and waste.

Using water in tractor tires to increase drawbar pull. Implement and Tractor. v. 51, no. 20. October 3, 1936. p. 30. Table compiled by Goodyear Tire & Rubber Company shows water capacities of various sizes of tractor tires.

Water weighting air tires on tractors. By W.C. Bray. Farm Implement News. v. 57, no. 23. November 5, 1936. p. 44. Table gives amount and weight of water filled to valve level.

Tractors.

Baby tractor rides sidewalk while cultivating park. Popular Mechanics. v. 66, no.1. July, 1936. p. 4. Drags three-disk plow on one side to break up ground and destroy weeds. Behind tractor is a drag that pushes dirt off sidewalk. Wheels have pneumatic tires, rear ones four feet in diameter and a foot wide.

Braking factors essential to put tractors on highways. By C.E. Packer. Implement and Tractor. v. 51, no. 17. August 22, 1936. p. 14-15. Buyers will deman easy operation, capable of locking wheels, ability to brake trailers, with long life and accessibility for service.

Cost of tractor power. By Ralph A. Hayne. Capper's Farmer. v. 47, no. 10. October, 1936. p. 20. Gives method for arriving at fair daily or hourly charge for use of tractors.

Increasing power in old tractors; its advantages and problems. By C.E. Packer. Implement and Tractor. v. 51, no. 19. September 19, 1936. p. 14-15.

1935 tractor costs in Michigan. By K.T. Wright. Quarterly Bulletin of Michigan Agricultural Experiment Station. v. 19, no. 1. August 1936. p. 21-23.

One more use for the tractor. By C.W. Smith. Implement and Tractor. v. 51, no. 20. October 3, 1936. p. 28-29. Article gives some ideas on not only how they can do this particular job of distributing and packing silage with their tractors, but also help them to see other possibilities for its use. It is a pity that up until just within the last few years, average number of days per year that tractor had been used by farmers was 35 days. If tractor is to make money for its owner it must be worked more days per year than this; and that work must be carefully planned because in just operating tractor and in burning kerosene and gasoline there is nothing made for owner. But work that is being done must really be necessary and productive work.

Ventilation.

Ventilation guide. American Blower Corporation. Detroit, Mich., 1936. 48p. Bulletin no. A-9329

Walls.

Fabricated wall panel strengths shown in tests. American Builder and Building Age., v. 58, no. 9. September, 1936. p. 82, 114. Previous tests at Forest Products Laboratory, U.S. Department of Agriculture, have shown that strength and rigidity and wall panels with plywood coverings may be increased enormously by gluing, instead of nailing plywood to studs, plates and sills. Increasing interest in this type of panel, especially since its use in experimental house recently built at Laboratory, led to following series of tests in which superiority of certain details of construction were determined.

Large clay slabs for low cost walls. By Frank F. Raine and Paul F. Cox. Brick and Clay Record. v. 89, no. 3. September, 1936. p. 88, 110.

Walls. (Cont'd)

Clay slabs 4 feet by 2 inches can be made by methods used in making abrasive wheels

New ideas in clay products and wall designs. By D.P. Ogden. Brick & Clay Record. v. 89, no. 2. August, 1936. p. 51-55. Discusses possible changes in dimensions of standard clay products units and new methods of masonry design and construction.

So your walls leak! By Perry M. Moore. Factory Management and Maintenance. v. 94, no. 5. May, 1936. p. 189-190, 53, 54, 56 (Advertising pages).

So your walls leak! By Perry M. Moore. Factory Management and Maintenance. v. 94, no. 6. June, 1936. p. 225-226, 37-39 (advertising pages). To stop leakage of walls: 1. When there are parapets; a. Be sure there is complete water cut-off across top or through parapet, above roofing. b. Establish air seal from this cut-off point to roof level; 2. Close all cracks on face of wall with plastic materials: a. Use calking compound where major movement may occur. b. Use plastic pointing compound where minor movement may occur; 3. Correct general porosity of vertical masonry faces with transparent waterproofing materials; 4. Study relationships of exterior and interior sides of walls with reference to: a. Differential pressure. b. Atmospheric moisture and temperature; 5. Concentrate expenditures on proper treatment of upper areas. It is rarely necessary to waterproof wall from coping to grade.

Water Conservation.

Santa Clara's water table's rise. By J.H. Currie. Pacific Rural Press. v. 132, no. 5. August 1, 1936. p. 114. $3,000,000 water conservation project of Santa Clara Valley Water Conservation District is almost complete. Results have been very gratifying. Underground water tables have risen from 10 to over 30 feet this season. One report states that pumping costs will be $200,000 less than in 1934 due to this rise in water tables.

Some recent federal activities in the conservation of water resources. By Abel Wolman. 1936. 1252-1294p. Reprinted from Journal of the American Water Works Association, v. 28, no. 9. September 1936. Presented before the annual convention of the American Water Works Association, Los Angeles, California, June 9, 1936.

Water Proofing.

Curing leaky basements. Popular Mechanics. v. 65, no. 6. June, 1936. p. 914-918.

Water Rights.

Administrative control of underground water; physical and legal aspects; Discussion. By Joseph Jacobs, W.D. Faucette and J.E. Willoughby. Proceedings of American Society of Civil Engineers. v. 62, no. 6. August 1936. p. 965-969.

Administrative control of underground water; physical and legal aspects: Discussion. By R.E. Savage. Proceedings of American Society of Civil Engineers. v. 62, no. 7. September, 1936. p. 1087-1088.